



New Environment and Energy Vision

September 28, 2021

Directionality of NTT Group's Transformation



Social/Economic Directionality

During a COVID-19 and Post-COVID-19 Society

Realization of a Well-Being Society

NTT Group's Directionality

A New Management Style Suitable for a Decentralized Network Society

Improvement of Corporate Value through ESG Initiatives

Contribution to the Achievement of a Sustainable Society

Addressing
Environmental Issues

Improving
Economic Growth

Paraconsistent

NTT **Green** Innovation toward 2040

Achieving Zero Environmental Impact and
Improving Economic Growth at the Same Time

Reduction of Environmental
Impact through Business
Activities

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Creation of Breakthrough
Innovation

NTT is Innovating for a Sustainable Environment

2030

**80% Reduction in Greenhouse Gas Emissions
(compared to FY2013)**

**Mobile
(NTT DOCOMO)**

Data Centers

Carbon-Neutral

2040

Carbon-Neutral

- Targets of the Above Reduction Objectives
 - GHG Protocol: Scope 1 (our own direct greenhouse gas emissions) and Scope 2 (indirect emissions associated with the purchase of electricity, heat and steam that are provided by other companies)
 - Mobile :15 companies in the NTT DOCOMO Group (as of September 28, 2021)
- NTT Group's Reduction Target (Scope 1+2): Upgraded to SBT's 1.5 °C level

Towards the Achievement of Carbon Neutrality



- **Increased use of renewable energy:** Reduce greenhouse gas emissions by **45%**⁽¹⁾
- **Lower energy consumption with IOWN technologies:** Reduce greenhouse gas emissions by **45%**⁽²⁾

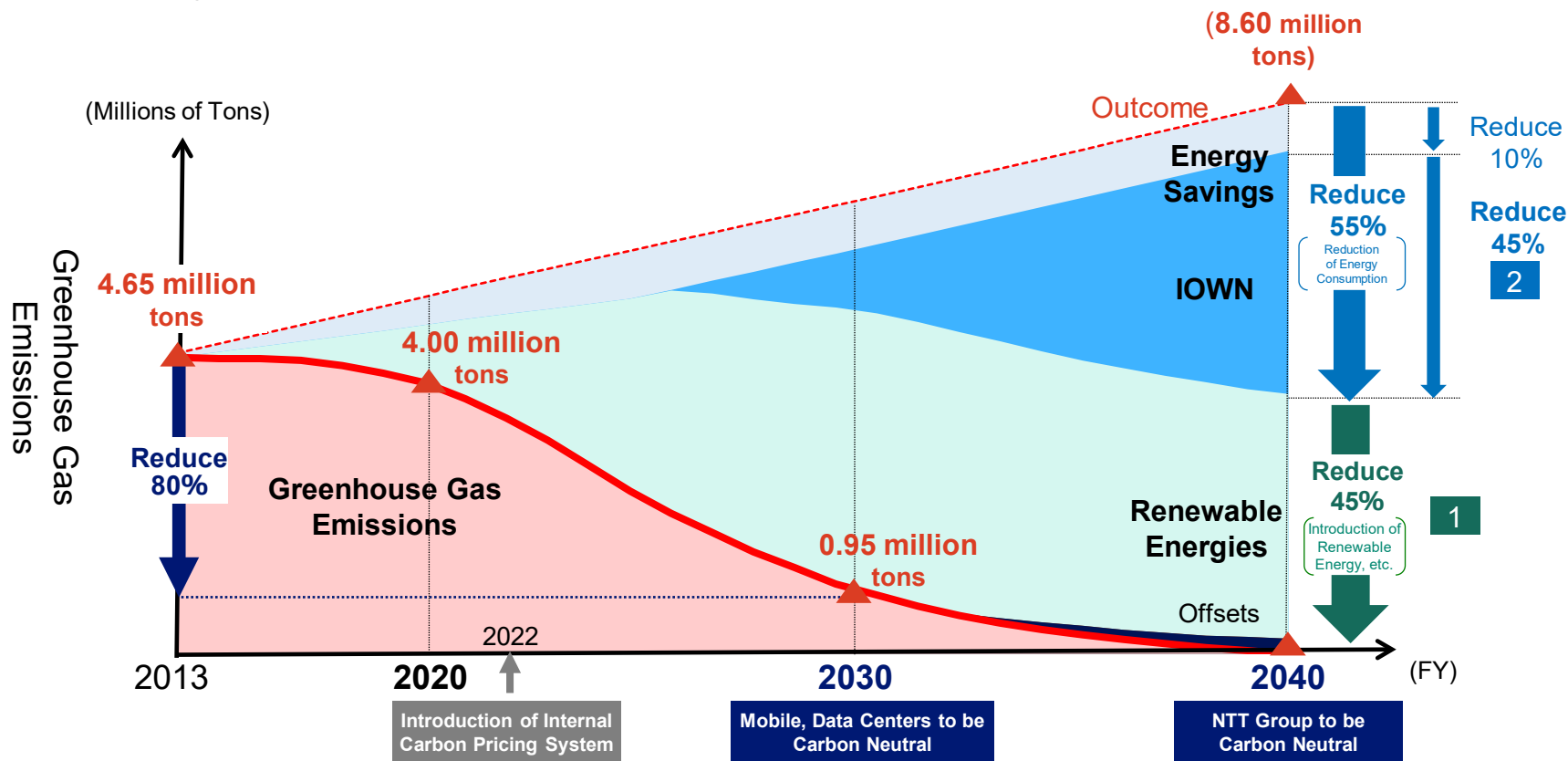


Illustration of NTT Group Greenhouse Gas Emission⁽³⁾ Reductions (Domestic + Overseas)

(1) Estimated Introduction of Renewable Energy (including actual renewable energy through Non-Fossil Fuel Certificates) → FY2020: 1.0 billion kWh; FY2030 to FY2040: around 7.0 billion kWh
 The introduction of renewable energy will have the optimal types of energy determined on the basis of each country's energy composition, etc. Approximately half of the domestic renewable energy usage is anticipated to be from energy sources owned by NTT (FY2030).

(2) Estimated Reduction of Energy Consumption through the Introduction of IOWN (Comparison to Outcome) → FY2030: (2.0) billion kWh ((15)%); FY2040: (7.0) billion kWh ((45)%
 Percentage of Introduction of IOWN (Photonics-electronics Convergence Technologies, etc.) out of Total Energy Volume → FY2030: 15%; FY2040: 45%

(3) GHG Protocol: for Scope 1 and 2

NTT's Contributions to Reducing Society's Environmental Impact



■ Expanding adoption of IOWN technologies from the telecommunications field into other industries

- Contribute to the **reduction of greenhouse gases⁽¹⁾** in Japan and the world
 - > Japan ⇒ Reductions: over 0.02 billion tons; Reduction Rate: over 4%
 - > World ⇒ Reductions: over 0.3 billion tons; Reduction Rate: over 2%
- Further **accelerate DX⁽²⁾** (e.g. of digital twin computing)
- Promote greenhouse gas reduction across the entire supply chain

■ Providing new services that contribute to carbon neutrality

■ Strengthening development and expanding introduction of NTT Group's Renewable Energy Plan

- Promotion of local energy production for local consumption

(1) Conditions for Reduction Estimates

- Target: beginning in FY2040
- Adoption Rate of IOWN for Electric Semiconductors, etc. (Photonics-electronics Convergence Technologies, etc.): approximately 50%
- CO₂ Emission Factor: Japan · · · 0.185kg-CO₂/kWh; World · · · 0.130kg-CO₂/kWh

(2) CO₂ Reduction Potential: approximately 50% (2030; Target: World, calculated based on GeSI and IEA estimates)

(Reference) NTT's Main Initiatives



Reduction of Environmental Impact through Business Activities

➤ Reducing society's environmental impact



- ✓ Further acceleration of DX and promotion of Remote World
- ✓ Promotion of regional urban development and the introduction of new social infrastructure development
- ✓ Promotion of greenhouse gas reduction across the entire supply chain
- ✓ Provision of new services that contribute to carbon neutrality
- ✓ Contribute to local production and consumption of energy, through smart grids based on battery farms
- ✓ Expansion of green electricity retail

Green by ICT

Contributions to Reducing Society's Environmental Impact

Creation of Breakthrough Innovation

➤ Creation of innovative environmental energy technology



- ✓ Use of 4D digital platform for future predictions / optimal use of urban assets*
- ✓ Optimal operation of fusion reactors (ITER/QST)
- ✓ Lightning charging
- ✓ Applied genome-editing technology for "Green" (Collaboration)

* Energy, transportation, logistics, etc.

➤ Introduction of IOWN and Expansion of Renewable Energy



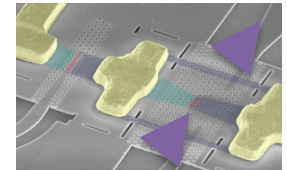
- ✓ Reduction of energy consumption through the introduction of IOWN
- ✓ Expansion of the development and usage of renewable energy
- ✓ Introduction of an internal carbon pricing system
- ✓ Issuance of green bonds

Green of ICT

Reducing NTT's Own Environmental Impact

➤ Achievement of Ultra-Low Power Consumption

- ✓ Photonics-electronics Convergence Technologies (IOWN All Photonic Network)



➤ Creation of Decentralized Technology

- ✓ Photonic disaggregated computing
- ✓ Space integrated computing network

This document is a translation of the Japanese original. The Japanese original is authoritative.

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* "FY" in this material indicates the fiscal year ending March 31 of the succeeding year.

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